

Useful Background Information

Bone health is primarily of concern to the elderly. Most middle school students probably know of grandparents who have such problems as osteoporosis, broken hips or shoulders, or arthritis. Childhood bone problems are less common today than they were decades ago when nutritional deficiencies caused rickets. But even today, children get broken bones through accidents or sports (you probably have at least one case in each class each year).

This exercise gives students a chance to think about bone strength and the processes involved in the healing of broken bones. But more than that, this lesson encourages students to use their ingenuity in designing experiments that might test better ways of treating bone problems. The exercise will also reinforce an understanding of the pre-clinical or clinical trial process that the medical community currently uses to evaluate new treatments.

The Veterinary Black Bag Program

Project Goals:

- Develop Veterinarian's Black Bags (VBBs) of instructional items and pamphlets for middle school teachers to support classroom visits by local veterinarians.
- Provide professional development for veterinarians and teachers on how to use items in the VBBs
- Promote inquiry-based thinking about health-related subjects while emphasizing the value of biomedical research and promoting careers in science.



PEER

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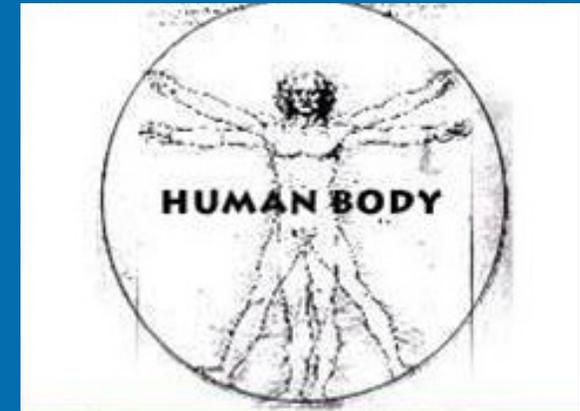
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<http://peer.tamu.edu/VBB/Summary.asp>

Bone Experiment Design

Follow Up Lesson



The instruction in this module includes:

Presentation on *Orthopedics*

Follow-up lessons on:

Nutrition and Bone

Exercise and Bone

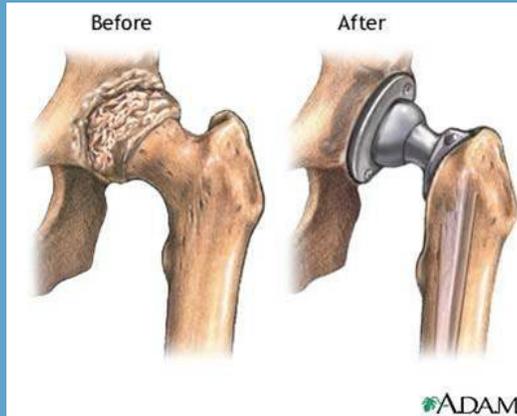
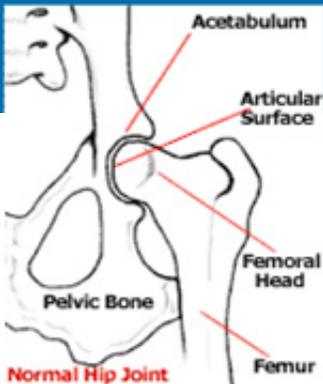
Bone Experiment Design

Summary of Lesson Content

Objectives

Students will:

1. Apply the scientific method to research design.
2. Design a pre-clinical or clinical study on some aspect of orthopedics.



Student groups will design a clinical study on some aspect of orthopedics, using the principles of scientific method.



Questions to Ask:

Why would it be important to do this study?

Are there other ways to get at this problem than the particular study you have devised?

What kind of data do you expect?
How will you analyze it?

What would be the next step? ... if the hypothesis is confirmed? ... if the hypothesis is not confirmed?

